



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,987	05/16/2005	Hiroaki Sudo	L9289.05135	1913
525989	7590	10/05/2009		
Dickinson Wright PLLC			EXAMINER	
James E. Ledbetter, Esq.			LOO, JUVENA W	
International Square				
1875 Eye Street, N.W., Suite 1200			ART UNIT	PAPER NUMBER
Washington, DC 20006			2416	
			MAIL DATE	DELIVERY MODE
			10/05/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/534,987	Applicant(s) SUDO, HIROAKI
	Examiner JUVENA LOO	Art Unit 2416

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 15 May 2009.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 18 and 20-33 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 18 and 20-33 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO/146/08)
Paper No(s)/Mail Date _____

4) Interview Summary (PTO-413)
Paper No(s)/Mail Date _____

5) Notice of Informal Patent Application

6) Other: _____

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 18 and 33 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In particular, the length of second guard interval does not change even if the number of retransmission increases.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claim 33 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. In particular, there is not any structure to performing the steps in the method.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 18, 20, 21, 31, 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mody et al. (US 2002/0181509 A1) in view of Tong et al. (US 7,072,307 B2).

Regarding claim 18, a *transmitting apparatus comprising:*

an insertion section that inserts a first guard interval in the systematic bit data and inserts a second guard interval in the parity bit data (Mody: see Figure 3, Cyclic Prefix Inserter 40 and see Figure 4; see also "The output from the IDFT...thereby eliminating ISI" in page 4, section 0048; Mody discloses that cyclic prefixes, serve as guard intervals, are added separately to the two output data sections); and

a control section that sets a length of the first guard interval larger than a length of the second guard interval (Mody: see "the step of producing a frame...improving synchronization" in page 13, claim 49; Mody discloses that two different guard intervals with different lengths are assigned to each section) *and lengthens the first guard interval or the second guard interval* (Mody: see "The cyclic prefix inserter 40 repeats G...thereby eliminating ISI" in page 4, section 0048).

However, Mody does not explicitly disclose the features comprising:
a coding section that encodes a transmit signal and outputs systematic bit data and parity bit data;
a control section in accordance with an increase in a number of retransmissions of the systematic bit data and the parity bit data.

Tong discloses a system and method for transmitting high speed data comprising the features:

a coding section that encodes a transmit signal and outputs systematic bit data and parity bit data (Tong: see Figure 6 and "FIG. 6 is a flow...operation ends" in column 10, line 52 through column 12, line 56; Tong discloses a system that generates systematic as well as parity bit data. The combination systematic and parity bit data for transmission depends on the number of retransmission; Mody discloses using different lengths for the two guard intervals; the combination of Mody and Tong provide a system that improves transmission efficiency by supporting partial soft combining of retransmitted data with previously transmitted data but also by increasing the length of guard interval);

a control section in accordance with an increase in a number of retransmissions of the systematic bit data and the parity bit data (Tong: see Figure 6 and "FIG. 6 is a flow...operation ends" in column 10, line 52 through column 12, line 56; Tong discloses

a system that generates systematic as well as parity bit data. The combination systematic and parity bit data for transmission depends on the number of retransmission; Mody discloses using different lengths for the two guard intervals; the combination of Mody and Tong provide a system that improves transmission efficiency by supporting partial soft combining of retransmitted data with previously transmitted data but also by increasing the length of guard interval).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of Mody by using the feature, as taught by Tong, in order to maximize a coding gain and transmission efficiency (Tong: see Abstract).

Regarding claim 20, *wherein said control section lengthens only the first guard interval* (Mody: see "The cyclic prefix inserter 40 repeats G...thereby eliminating ISI" in page 4, section 0048).

However, Mody does not explicitly disclose the feature comprising:
the control section in accordance with an increase in the number of retransmissions of the systematic bit data and the parity bit data.

Tong discloses a system and method for transmitting high speed data comprising the features:

the control section in accordance with an increase in the number of retransmissions of the systematic bit data and the parity bit data (Tong: see Figure 6 and "FIG. 6 is a flow...operation ends" in column 10, line 52 through column 12, line 56; Tong discloses a system that generates systematic as well as parity bit data. The combination systematic and parity bit data for transmission depends on the number of retransmission; Mody discloses using different lengths for the two guard intervals; the combination of Mody and Tong provide a system that improves transmission efficiency by supporting partial soft combining of retransmitted data with previously transmitted data but also by increasing the length of guard interval).

Regarding claim 21, further comprising an allocation section that allocates the systematic bit data and the parity bit data to different symbols (Tong: see Figure 6 and "FIG. 6 is a flow...operation ends" in column 10, line 52 through column 12, line 56; Tong discloses a system that generates systematic as well as parity bit data. The combination systematic and parity bit data for transmission depends on the number of retransmission; Mody discloses using different lengths for the two guard intervals; the combination of Mody and Tong provide a system that improves transmission efficiency by supporting partial soft combining of retransmitted data with previously transmitted data but also by increasing the length of guard interval).

Regarding claim 31, a base station apparatus comprising a transmitting apparatus according to claim 18 (Mody: see Figures 1, 12, 14, 16, and 18).

Regarding claim 32, a communication terminal apparatus comprising a transmitting apparatus according to claim 18 (Mody see Figures 1 and 8).

Regarding claim 33, a guard interval setting method comprising:

a step of inserting a first guard interval in the systematic bit data and inserting a second guard interval in the parity bit data (Mody: see Figure 3, Cyclic Prefix Inserter 40 and see Figure 4; see also "The output from the IDFT...thereby eliminating ISI" in page 4, section 0048; Mody discloses that cyclic prefixes, serve as guard intervals, are added separately to the two output data sections); and

a step of setting a length of the first guard interval larger than a length of the second guard interval (Mody: see "the step of producing a frame...improving synchronization" in page 13, claim 49; Mody discloses that two different guard intervals with different lengths are assigned to each section) and lengthening the first guard interval or the second guard interval_(Mody: see "The cyclic prefix inserter 40 repeats G...thereby eliminating ISI" in page 4, section 0048).

However, Mody does not explicitly disclose the features comprising:

a step of encoding a transmit signal and outputting systematic bit data and parity bit data;

a step in accordance with an increase in a number of retransmissions of the systematic bit data and the parity bit data.

Tong discloses a system and method for transmitting high speed data comprising the features:

a step of encoding a transmit signal and outputting systematic bit data and parity bit data (Tong: see Figure 6 and "FIG. 6 is a flow...operation ends" in column 10, line 52 through column 12, line 56; Tong discloses a system that generates systematic as well as parity bit data. The combination systematic and parity bit data for transmission depends on the number of retransmission; Mody discloses using different lengths for the two guard intervals; the combination of Mody and Tong provide a system that improves transmission efficiency by supporting partial soft combining of retransmitted data with previously transmitted data but also by increasing the length of guard interval);

a step in accordance with an increase in a number of retransmissions of the systematic bit data and the parity bit data (Tong: see Figure 6 and "FIG. 6 is a flow...operation ends" in column 10, line 52 through column 12, line 56; Tong discloses a system that generates systematic as well as parity bit data. The combination systematic and parity bit data for transmission depends on the number of

retransmission; Mody discloses using different lengths for the two guard intervals; the combination of Mody and Tong provide a system that improves transmission efficiency by supporting partial soft combining of retransmitted data with previously transmitted data but also by increasing the length of guard interval).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of Mody by using the feature, as taught by Tong, in order to maximize a coding gain and transmission efficiency (Tong: see Abstract).

7. Claims 22 - 27 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mody et al. (US 2002/0181509 A1) in view of Tong et al. (US 7,072,307 B2) and further in view of Sudo (EP 1014639 A2).

Regarding claim 22, *wherein said control section sets the length of the first guard interval and the length of the second guard interval according to delay distribution information* (Sudo: see "The OFDM transmission/reception apparatus...transmission signal and transmitted" in page 7, section 0058 through page 8, section 0069).

Regarding claim 23, *wherein said delay distribution information is transmitted from a communicating party* (Sudo: see "The OFDM transmission/reception

apparatus...transmission signal and transmitted" in page 7, section 0058 through page 8, section 0069).

Regarding claim 24, *further comprising a detection section that detects said delay distribution information from a received signal* (Sudo: see "The OFDM transmission/reception apparatus...transmission signal and transmitted" in page 7, section 0058 through page 8, section 0069).

Regarding claim 25, *wherein said control section sets the length of the first guard interval and the length of the second guard interval according to a transmission time interval* (Sudo: see Then, guard interval inserter 105...generate a guard interval" in page 6, section 0041 through page 7, section 0049).

Regarding claim 26, *wherein said control section sets the length of the first guard interval and the length of the second guard interval according to a used band* (Sudo: see Then, guard interval inserter 105...generate a guard interval" in page 6, section 0041 through page 7, section 0049).

Regarding claim 27, *wherein said control section makes the length of the first guard interval and the length of the second guard interval larger in proportion as a ratio of said used band to a band whose use is permitted is smaller* (Sudo: see Then, guard

interval inserter 105...generate a guard interval" in page 6, section 0041 through page 7, section 0049).

Regarding claim 30, *wherein said control section makes a length of the first guard interval and a length of the second guard interval upon retransmission of the systematic bit data and the parity bit data, an integral multiple of a length of the first guard interval and a length of the second guard interval upon first transmission of the systematic bit data and the parity bit data* (Sudo: see Figure 6 and "The guard interval inserter...to the channel quality" in page 6, section 0041 through page 7, section 0055).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of Mody with Tong by using the feature, as taught by Sudo, in order to improve transmission efficiency (Sudo: see page 4, section 0028).

8. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mody et al. (US 2002/0181509 A1) in view of Tong et al. (US 7,072,307 B2) and further in view of Gerlach et al. (US 6,628,723 B1).

Regarding claim 28, *further comprising*:

a spreading section that performs spreading processing on the systematic bit data and the parity bit data (Gerlach: see Figure 2 and “FIG. 2 depicts a transmitter...frame to be filled” in column 4, line 53 through column 5, line 30); and

a multiplexing section that code multiplexes the systematic bit data and the parity bit data subjected to spreading processing (Gerlach: see Figure 2 and “FIG. 2 depicts a transmitter...frame to be filled” in column 4, line 53 through column 5, line 30), *wherein said insertion section inserts the first guard interval and the second guard interval in the code multiplexed systematic bit data and the parity bit data* (Gerlach: see Figure 2 and “FIG. 2 depicts a transmitter...frame to be filled” in column 4, line 53 through column 5, line 30).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of Mody with Tong by using the feature, as taught by Gerlach, in order to control the amount of redundancy introduced by a turbo encoding process (Gerlach: see Abstract).

Allowable Subject Matter

9. Claim 29 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
10. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 29, the prior arts do not disclose the feature: wherein a spreading ratio of said spreading section is made "1" and a code multiplexing number of the systematic bit data and the parity bit data is made "1."

Response to Arguments

11. Applicant's arguments with respect to claims 18 and 33 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JUVENA LOO whose telephone number is (571)270-1974. The examiner can normally be reached on Monday - Friday: 7:30am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kwang Yao can be reached on (571) 272-3182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Hanh Nguyen/
Primary Examiner, Art Unit 2416

/JUVENA LOO/
Examiner
Art Unit 2416
September 30, 2009